Propositions

1. There is a duality between the stability analysis and safety analysis. One can analyze the safety of a control system using analogous theories for studying systems' stability. (Chapter 3.)

2. The time-scale separation assumption in the design of a multi-level controller is no longer suitable for the control design of safety-critical systems. (Chapter 3.)

3. For guaranteeing systems' safety, the potential function does not need to be unbounded on the boundary of the unsafe state. (Chapter 3.)

4. Input-to-state stability with respect to an invariant set is not equivalent to input-to-state safety. (Chapter 4.)

5. Understanding systems' fragility is as important as studying systems' robustness. (Chapter 4.)

6. When one has apriori knowledge on the mathematical structure of the underlying systems, it may simplify the design of stabilizing controllers with guaranteed safety. (Chapter 5.)

7. A PhD study trajectory may be a (non-unique) solution to a port-Hamiltonian system where the effort and flow variables are the research effort and publication flow, respectively.

8. "We may regard the present state of the universe as the effect of its past and the cause of its future." (Pierre Simon Laplace, *A Philosophical Essay on Probabilities*).

9. Religion is not a poison for the mind but rather a system for proving the existence of the creator of the universe.